

diagnosis, and this information is then fed into a computer. At regular intervals the doctor's performance in accuracy of diagnosis and time taken to get to the patient are calculated. Inefficiency is an indication for a period of postgraduate education, and prompt good work is rewarded. Medical discipline of this nature is possible because the chief of department is of professorial status and there is no shortage of doctors.

### Polyclinics

Since the disposal of patients is arranged by telephone there is no need for a sorting department (casualty). Patients with real emergencies are taken to the accident ward or to special departments. Since the polyclinics are adjacent to the district hospitals the doctor on duty can get immediate specialist advice by internal telephone. There are about 25 general practitioners in the polyclinic and there is a rota for emergency duties. Specialization is encouraged and we heard of one practitioner who was preparing a thesis on the wrist injuries that he had treated. There is a large supporting ancillary staff and they deal with all patients who arrive with urgent problems (except ambulance cases) as well as their own general practice. The chief doctor in the polyclinic is a consultant and his duties are mainly administrative.

### Lessons for Britain

We were most impressed by three unique features of the accident

and emergency services. Firstly, the organization is large and efficient and obviously this specialty has equal standing with other special departments. Secondly, all grades of staff in the ambulance service feel they have an important part to play in accident prevention. Thirdly, the casual attendant does not present a problem as minor injuries and medical complaints are dealt with in the polyclinics adjacent to the district hospitals.

A service of this quality can only exist if there are enough medical personnel. In the U.S.S.R. there are 35 doctors for every 10 000 people compared with 10 for every 10 000 in the United Kingdom, and provision for health care has a very high financial priority. The lack of adequate numbers of doctors precludes the establishment of accident services in the United Kingdom on the Russian pattern, but one feature which might with advantage be adopted in certain places is the polyclinic. For example, in large conurbations where a hospital has an unusually large general practice load the provision of a polyclinic in the grounds of that hospital could lead to a considerable improvement.

This visit was organized by the British Council under the provisions of the Anglo-Soviet cultural agreement. We would like to pay tribute to the British Council for its excellent and comprehensive arrangements for our visit. We would also like to thank the officials of the Russian Ministry of Health and the many people in Russia who went out of their way to make us welcome and show us what we asked to see. The hospitality of the Russian surgeons was almost overwhelming.

## Medical Education

### Assessment of Clinical Competence using Objective Structured Examination

R. MCG. HARDEN, MARY STEVENSON, W. WILSON DOWNIE, G. M. WILSON

*British Medical Journal*, 1975, 1, 447-451

#### Summary

To avoid many of the disadvantages of the traditional clinical examination we have introduced the structured clinical examination. In this students rotate round a series of stations in the hospital ward. At one station they are asked to carry out a procedure, such as take a history, undertake one aspect of physical examination, or interpret laboratory investigations in the light of a patient's problem, and at the next station they have to answer questions on the findings at the previous station

and their interpretation. As they cannot go back to check on omissions multiple-choice questions have a minimal cueing effect. The students may be observed and scored at some stations by examiners using a check list.

In the structured clinical examination the variables and complexity of the examination are more easily controlled, its aims can be more clearly defined, and more of the student's knowledge can be tested. The examination is more objective and a marking strategy can be decided in advance. The examination results in improved feedback to students and staff.

#### Introduction

Despite the increased interest in assessment procedures in medicine and the wide use of objective techniques in written examinations the clinical examination has remained largely unchanged. The use of objective tests of the multiple-choice type has been regarded as impracticable as the answer is suggested to the candidate in the test.<sup>1</sup> Any changes must not increase the already considerable difficulties in assessing clinical competence in the many medical students who have to be examined.

Attention has recently been drawn to some of the serious

Department of Medical Education, University of Dundee, Dundee DD1 4HN

R. MCG. HARDEN M.D. M.R.C.P. Head of Division of Clinical Medical Education

Department of Therapeutics, University of Dundee, Dundee  
W. WILSON DOWNIE M.B. M.R.C.P. Lecturer

Department of Medicine, Western Infirmary, Glasgow  
MARY STEVENSON M.B. CH.B. Lecturer  
G. M. WILSON M.D. F.R.C.P. Regius Professor

weaknesses of the clinical examination.<sup>2</sup> The student's competence is usually assessed by two examiners who test his skill on a few patients. Thus the luck of the draw plays too dominant a part in the procedure, and variation in the marking standards between examiners may be conspicuous.<sup>3</sup> There is often confusion about what is being tested: from being a test of skills in eliciting a history, carrying out a physical examination, and interpreting the results of the examination and history the assessment may become a test of the candidate's factual knowledge. The need for a more objective approach to the assessment of clinical competence has been widely advocated.<sup>1-7</sup> We describe here a structured clinical examination which avoids many of the disadvantages of the more conventional methods of assessing clinical competence.

### Form of Examination

As with the conventional "clinical," the examination is conducted in the hospital wards. The candidate, instead of being taken to a small number of cases by the examiner, or pair of examiners, however, rotates round several stations at each of which he spends five minutes. The stations are of two types. At the first the student is given a written instruction and has to carry out a procedure—for example, "Auscultate the praecordium for evidence of a valvular lesion" or "Read the summary of the patient's history noted below and test as you think appropriate the urine sample provided." The student while carrying out the procedure may make notes of his findings, which are for his own personal use and are not inspected by the examiners. After five minutes the student moves to a second station, where he answers questions on his findings at the previous station and his interpretation of the findings. The questions may be open-ended or of the multiple-choice type. For ease of marking we have preferred the latter, in which a common stem is followed by five alternatives, any number of which can be correct. The students record their answers on a standard answer sheet which they carry round with them.<sup>8</sup> The answers are marked +1 for a correct answer, -1 for a wrong answer, and 0 for a question not answered.<sup>9</sup>

The concept of two different types of stations is important and has two advantages. In the first place it diminishes the effect of cueing, which has concerned some examiners.<sup>1-10</sup> A candidate is presented with a problem to solve or an examination to be carried out without the questions which he will be asked later in front of him. When he is presented with the questions at the next station he cannot go back to rectify any omissions on his original examination. Thus the questions do not provide a check list for his examination or suggest ready solutions in his handling of the problem. The second advantage of the two-station approach is that more students can be examined at any one time. Thus, while one student is carrying out a procedure another student who has already completed that stage is answering the questions.

Students rotate through several stations (fig. 1). While the number of stations may be varied to suit the requirements of the particular examination we have found that 16 is convenient: with this the examination can be completed in 85 minutes, and with two complete rotations 32 students can be examined in a morning. Students should begin only at a "procedure" station—the odd-numbered stations. Thus, with 16 stations at time zero minutes eight students start at stations 1, 3, 5, . . . 15. At five minutes those students move to stations 2, 4, 6, . . . 16 and a further eight students start at stations 1, 3, 5, . . . 15.

### Examiners' Score Sheets

At some of the procedure stations the candidate's performance may be observed and scored by an examiner. A check list is completed by the examiner for each student. He may, for example, be asked to observe whether the candidate did or

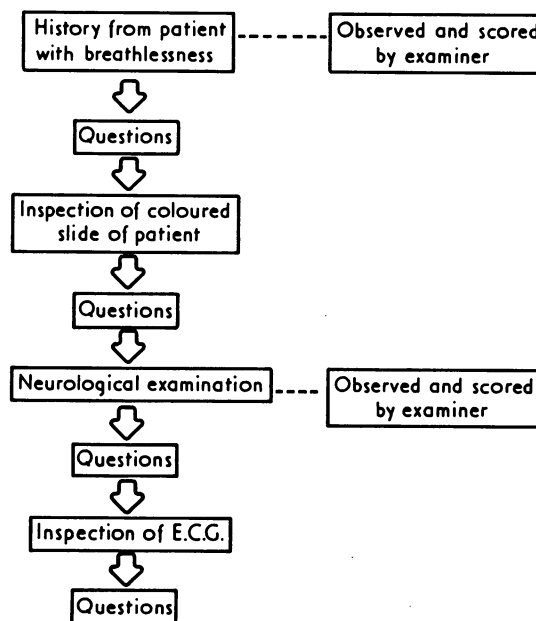


FIG. 1—Students rotate through a number of stations. "Procedure" stations are followed by those in which candidate is asked questions relating to his findings and their interpretation.

STATION NO. 1																					
Student's Name:	No. <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																				
Instructions to examiner: Please tick appropriate boxes.																					
The Candidate:	<table border="1"> <thead> <tr> <th>Yes</th> <th>No</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Yes	No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yes	No																				
<input type="checkbox"/>	<input type="checkbox"/>																				
<input type="checkbox"/>	<input type="checkbox"/>																				
<input type="checkbox"/>	<input type="checkbox"/>																				
<input type="checkbox"/>	<input type="checkbox"/>																				
<input type="checkbox"/>	<input type="checkbox"/>																				
<input type="checkbox"/>	<input type="checkbox"/>																				
<input type="checkbox"/>	<input type="checkbox"/>																				
<input type="checkbox"/>	<input type="checkbox"/>																				
<input type="checkbox"/>	<input type="checkbox"/>																				
Date _____ Examiner's Signature _____																					

FIG. 2—Example of examiner's check list for station at which student was asked to "examine the pulse and auscultate for possible aortic valvular lesion."

did not auscultate at the mitral area with a patient turned over on her left side. Initially a simple "yes" or "no" recording scheme was adopted (fig. 2). Later this was modified, however, (fig. 3) to allow recording of a qualified "yes." In addition to the check list, the content of which is agreed in advance by the panel of the examiners, the examiner may be asked to grade the student's general proficiency on a five-point scale (fig. 3). Stokes<sup>8</sup> has recently emphasized the importance in determining the effectiveness of a doctor's work of such attitudinal attributes as poise, likeability, and capacity for making a good rapport with a patient and has suggested that there should be a separate assessment by the examiner in this nebulous but crucial area. While the structural clinical examination may not be the best method of judging students' attitudes<sup>11</sup> some useful general observations may be made.

STATION NO. 1			
Student's Name:		No. <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Instructions to examiner: Please tick appropriate boxes.			
	Carried out Satisfactorily	Attempted but not Satisfactory	Not Attempted
(1) General inspection			
(2) Palpate for apex beat			
(3) Palpate for thrills			
(4) Auscultate at apex			
(5) Turn patient on L. side			
(6) Auscultate in axilla			
(7) Auscultate at pulm. area			
(8) Auscultate at aortic area			
(9) Auscultate in neck			
(10) Auscultate at L. sternal edge			
(11) Sit forward and auscultate in expiration			
(12) Auscultate at tricuspid area			
(13) General proficiency	Excellent <input type="checkbox"/> Inadequate <input type="checkbox"/>	Good <input type="checkbox"/> Grossly inadequate <input type="checkbox"/>	Satisfactory <input type="checkbox"/>
(14) Attitude to patient	Excellent <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>	Satisfactory <input type="checkbox"/>	
Comments:			
Date _____	Examiner's Signature _____		

FIG. 3—Example of examiner's check list for station at which student was asked to "examine this patient's praecordium for evidence of rheumatic valvular disease."

### Scoring of the Examination

The student's final score is based on the number of correct and incorrect answers in the objective questions and on the score sheets handed in by the examiners. The allocation of marks between the different parts of the examination should be agreed in advance by the examiners and will vary with, among other things, the seniority of the students. Thus, with junior students greater emphasis will be placed on technique of examination and fewer marks awarded for the findings of their interpretation. It may be decided in advance that some items, though recorded, will not contribute to the final score—for example, the attitudinal assessment—but together with the other items will form the bases of feedback to the students. With the marking strategy decided in advance it is relatively simple using masks<sup>8</sup> and a programmable desk calculator to obtain a print out of the student's total marks for the examination and his marks in different sections of it.

### Types of Questions

The student's observation and ability to recognize and interpret patterns and to record the findings as an accurate case record may be tested by asking him, for example, "inspect the hands of the patient." Alternatively, a coloured slide can be displayed. In a recent examination the students were asked to inspect and note abnormalities in a coloured slide of the hands of a patient with rheumatoid arthritis. At the next station they were asked questions such as the following:

Station 4.—At station 3 you were asked to inspect the hands of a patient. Which of the following statements is/are true?

Question 3. There is swelling of:

- A. prox. I.P. joint on a 2nd finger.
- B. prox. I.P. joint on a 3rd or 4th finger.
- C. prox. I.P. joint on a 5th finger.
- D. one or more distal I.P. joints.
- E. the M.P. joints.

Question 4:

- A. There is swelling of the wrist.
- B. There is ulnar deviation of the hand.
- C. Hyperextension of the prox. I.P. joints is present.
- D. Muscle wasting is evident.
- E. Purpura is present.

Examples of stations in which skills of physical examination are tested are shown in figs. 1 and 2.

The following example is a set of questions on the student's findings after he has tested motor power and reflexes in the patient's legs at the preceding station:

Station 6.—Which of the following statements is/are true about the patient you examined at station 5?

Question 5:

- A. There is weakness of L. hip flexion.
- B. There is wasting of the R. quadriceps.
- C. Fasciculation is present in the calves.
- D. Clonus is present at the left ankle.
- E. The left knee jerk is increased.

Question 6:

- A. Both ankle jerks are present.
- B. The L. plantar is upgoing.
- C. The R. plantar is upgoing.
- D. There is weakness of left foot dorsiflexion.
- E. There is evidence of upper motor neurone damage.

Technique in history taking may also be assessed in the examination. The fact that the examiner does not observe the candidate taking a history is one of the weaknesses of the traditional clinical examination.<sup>9</sup> The student is asked to take a history in a specific area as it is not possible to take a detailed comprehensive history in the time available. An example is, "Take a history from this patient who was admitted to hospital 24 hours previously with acute breathlessness," when it is an advantage if a simulated rather than a real patient is used. The simulated patient may be a doctor not known to the students who as well as acting the role of the patient can score the student's history-taking technique. A brief is given to the doctor—"You are Elizabeth Henderson, a 23-year-old nurse. You have had asthma since childhood and normally use an inhaler. You have not been in hospital before. There is no relevant family history. You smoke 10-15 cigarettes a day. You were admitted to hospital as an emergency 24 hours previously with sudden onset of breathlessness. Before this you had been given an intravenous injection by your general practitioner but the breathlessness persisted. You have not had any cough or spit or chest pain."

Using a simulated patient has some advantages. A real patient may find it trying to repeat her history many times. Moreover, the information given may vary from student to student and the co-operation of the patient may also vary. Questions such as those below may be asked at the next station on the facts elicited during the history.

Station 8.—Which of the following statements are true about the patient from whom you have just taken a history?

Question 7:

- A. The patient's name is Elizabeth Henderson.
- B. The patient is 26 years old.
- C. The patient is a secretary.
- D. She has complained of dyspnoea since childhood.
- E. The present attack started acutely 24 hours previous.

## Question 8:

- A. Her G.P. gave her an I.V. injection prior to admission.
- B. There is a family history of asthma.
- C. She has a cough and purulent sputum.
- D. She has complained of chest pain on R. side.
- E. She uses an inhaler.

## Question 9:

- A. She smokes 10-15 cigarettes per day.
- B. This is her third admission to hospital with similar attacks.

The student may be presented with a brief summary of a history of a patient along with an x-ray film, E.C.G., or result of a laboratory investigation or he may be given a urine to test. The history below was presented together with a chest x-ray film which showed a small pneumothorax on the right side.

A man aged 23 experienced sharp pain in the right side of his chest and in the back after a bout of coughing and subsequently felt slightly breathless. The symptoms eased but he felt uncomfortable and accordingly reported to the casualty department of the local hospital. On examination the casualty officer detected no physical signs but ordered a chest x-ray picture to be taken. This is now in front of you. Examine it and prepare to answer some questions at the next station. (You will not be allowed to look at the x-ray again after you have left this station.)

One of the questions asked at the next station was whether the following statements were true:

- A. A cervical rib is present on the right side.
- B. A calcified Ghon's focus is present.
- C. There is a fractured rib on the right side.
- D. The condition would have been more evident if a film had been taken in full forced expiration.
- E. The patient should be admitted to hospital.

As part of the examination techniques such as vaginal examination or ophthalmoscopy can be assessed objectively without embarrassment or discomfort to patients using a plastic model simulator.<sup>12</sup>

## Analysis of Results

A detailed analysis of the student's performance at each station was carried out (table I). The discriminatory power of each part of the examination was determined and the marks in one part correlated with marks in another part and with the examination as a whole (table II).

## Poor Performance in Clinical Examination

The causes of failure in a clinical examination are of three types: (a) all-round inadequacy; (b) deficiency in some aspects—for example, poor technique in eliciting a history or carrying out a physical examination, incorrect attitude, or failure to recognize signs and interpret them; and (c) deficiency in specific subject areas—for example, neurological examination, interpretation of E.C.G.s, etc. With this type of examination it is possible to analyse separately the student's success in different parts of the examination and to obtain an overall score for techniques of examination, attitudes, and recognition and interpretation of the findings as well as for his performance in different subjects. In a recent clinical examination seven students were judged to have reached an insufficient standard to pass the examination. Of these seven three had a poor all-round performance, two had problems in recognizing and interpreting the findings, one had a poor technique of physical examination of the patient, and in the seventh the shortcoming seemed to be in one specific area—examination of the cardiovascular system.

TABLE I—Correct Answers (+) obtained by Students 1-33 to Questions on History Taking (Station 8 see Text)

Students	Questions											
	7A	7B	7C	7D	7E	8A	8B	8C	8D	8E	9A	9B
1												
2	+	+		+	+		+	+	+	+		
3	+	+		+	+	+	+	+	+	+		+
4	+	+		+	+	+	+	+	+	+	+	+
5			+	+	+	+	+	+	+	+		
6				+	+	+	+	+	+	+	+	+
7				+	+	+	+	+	+	+	+	+
8	+			+	+	+	+	+	+	+		
9			+	+	+	+	+	+	+	+	+	+
10	+	+		+	+	+	+	+	+	+		
11	+	+	+	+	+	+	+	+	+	+		
12	+	+	+	+	+	+	+	+	+	+	+	+
13	+	+		+	+	+	+	+	+	+		+
14	+	+	+	+	+	+	+	+	+	+		+
15			+	+	+	+	+	+	+	+		
16		+	+	+	+	+	+	+	+	+		
17			+	+	+	+	+	+	+	+		+
18	+	+	+	+	+	+	+	+	+	+		+
19			+	+	+	+	+	+	+	+	+	+
20	+	+	+	+	+	+	+	+	+	+		+
21	+	+	+	+	+	+	+	+	+	+		+
22	+	+	+	+	+	+	+	+	+	+		+
23	+	+	+	+	+	+	+	+	+	+		+
24				+	+	+	+	+	+	+		
25	+		+	+	+	+	+	+	+	+		
26	+	+	+	+	+	+	+	+	+	+		+
27	+		+	+	+	+	+	+	+	+		+
28	+		+	+	+	+	+	+	+	+	+	+
29	+	+	+	+	+	+	+	+	+	+		+
30	+	+	+	+	+	+	+	+	+	+		+
31	+	+	+	+	+	+	+	+	+	+	+	+
32	+	+	+	+	+	+	+	+	+	+	+	+
33	+	+	+	+	+	+	+	+	+	+	+	+
No. Correct	22	20	22	29	32	24	22	25	25	33	11	17

TABLE II—Correlation between Results in Different Parts of One Section of Examination and between Results in section and Whole Examination. Instruction to Candidates in Section shown was "Examine this Patient's Praecordium for Evidence of Rheumatic Valvular Disease".

	r	P
(1) Technique score on check list* V. total exam mark..	+0.65	<0.001
(2) Proficiency score* V. total exam mark ..	+0.40	<0.05
(3) Attitude* V. total exam mark ..	+0.34	<0.05
(4) (1) + (2) + (3) V. total exam mark ..	+0.60	<0.001
(5) Questions on findings V. total exam mark ..	+0.66	<0.001
(6) Technique score on check list V. proficiency score ..	+0.62	<0.001
(7) (1) + (2) + (3) V. questions on findings ..	+0.58	<0.001

\*See fig. 2.

## Correlation with Performance in Written Examination

Out of a class of 99 students divided into three groups 66 were examined by a traditional clinical examination and 33 were examined by the structured clinical examination. The performance of the students in the clinical examination was compared with their performance in a written multiple-choice question examination in medicine, surgery, and therapeutics. The marks in the clinical examination did not correlate with the marks in the written examination in the two groups of students who took the traditional clinical examination ( $\gamma = 0.17$  and  $\gamma = 0.21$ ). In the 33 students who took a structured clinical examination, however, there was a highly significant correlation between the marks in the clinical and the marks in the written examination ( $\gamma = 0.63$ ).

## Discussion

In the traditional clinical examination there are several variables—the student, the patient, and the examiner. In the structured clinical examination two variables, the patient and the examiner, are more controlled and a more objective assessment of the student's clinical competence is made. Moreover, it is possible to control its complexity and to define more clearly what skills, attitudes, problem-solving abilities, and factual knowledge are to be assessed. Because the examination is more objective it is more easily repeatable than the traditional clinical and standards from year to year may be more easily compared. The test samples a wider range of the candidate's knowledge and skills and can

include aspects seldom covered in the traditional clinical examination—for example, history taking in a simulated emergency admission. The marking strategy for the examination may be decided by the examiners in advance. Finally, the structured clinical examination can provide feedback to staff and to students to a much greater extent than conventional clinical examination. This is useful in directing further studies for the students and in designing teaching programmes for the staff. The examination can be used both as part of a final assessment and as part of a more continuous assessment—for example, at the end of each three-month period during the clinical years of the undergraduate's course.

The main disadvantage is the increased preparation required. As with many educational advances the benefits are achieved in part by more effort. This effort, however, takes place before the examination, and on the day of the examination the examiner's time is used more efficiently. Another possible disadvantage of this approach may be the feeling that the student's knowledge and skills are being put into compartments and that he is being discouraged from looking at the patient as a whole. We believe that this can be obviated by testing the student's competence in the more traditional type of "long case" as well or by assessing it with a tutor during his work on the wards. Finally, patients must be selected carefully for the examination and the questions organized to cause the patient the minimum of disturbance. Where a technique is being assessed—for example, testing the

visual fields—each examiner may have up to three patients so that each one is examined by only every third student. The use of simulated patients also helps to spare any annoyance, inconvenience, or discomfort to patients.<sup>13</sup>

We thank the many colleagues in Glasgow and Dundee who have contributed material and willingly helped in conducting the clinical examination and Mr. Richard Wakeford for his help with the data handling.

## References

- <sup>1</sup> Fleming, P. R., *et al.*, *British Medical Journal*, 1974, 2, 99.
- <sup>2</sup> Stokes, J. F., *The Clinical Examination*. Medical Education Booklet No. 2. Dundee, Association for the Study of Medical Education, 1974.
- <sup>3</sup> Wilson, G. M., *et al.*, *Lancet*, 1969, 1, 37.
- <sup>4</sup> Hubbard, J. P., *et al.*, *New England Journal of Medicine*, 1965, 272, 1321.
- <sup>5</sup> Charvat, J., McGuire, C., and Parsons, V., *A review of the nature and uses of Examinations in Medical Education*, Public Health Papers No. 36. Geneva, W.H.O., 1968.
- <sup>6</sup> Hubbard, J. P., *Measuring Medical Education*. Philadelphia, Lea and Febiger, 1971.
- <sup>7</sup> Marshall, V. R., and Lubbrook, J., *British Journal of Medical Education*, 1972, 6, 212.
- <sup>8</sup> Lever, R., *et al.*, *British Journal of Medical Education*, 1970, 4, 37.
- <sup>9</sup> Harden, R. McG., Lever, R., and Wilson, G. M., *Lancet*, 1969, 1, 40.
- <sup>10</sup> McCarthy, W. H., *Journal of Medical Education*, 1966, 41, 263.
- <sup>11</sup> Walton, H. J., *British Journal of Medical Education*, 1967, 1, 330.
- <sup>12</sup> Penta, F. B., and Kofman, S., *Journal of Medical Education*, 1973, 48, 442.
- <sup>13</sup> Barrows, H. S., *Canadian Medical Association Journal*, 1968, 98, 674.

# Any Questions?

## Substitutes for Cross-action Towel Clips

*Is there any cheap but effective substitute for the use of cross-action towel clips? Not only are these dangerous instruments, but they tear the drapes so frequently that repair is a major problem in a large central sterilization service department.*

Towel clips undoubtedly tear the drapes but a greater criticism is that they can produce painful little tears in the skin at their site of attachment, especially if tugged accidentally upon when the towels are being removed. The use of plastic adhesive sheeting, which comes from the manufacturers in already sterilized packets, avoids these disadvantages. The drapes are applied around the operation area in the usual way leaving a gap around the site of the incision. Plastic adhesive sheeting is then used to stick down the towels to the skin. This has the additional advantage of making sure that the towels drape smoothly over the operation area even when this is irregular, such as in procedures on a limb. The adhesive sheeting separates quite easily from the towels after surgery without damaging them. If this sheeting is unavailable, then Collodion or mastic may be used to tack down the drapes around the proposed incision.

## Antidepressants in Cardiac Disease

*Tricyclic antidepressants have been shown to be associated with an increased risk in cardiac patients. Is there any safe and effective antidepressant for patients with heart disease?*

This question focuses on relative risks, and as two specialized fields are involved joint or triple consultation is often necessary to provide an answer. The choice of antidepressant rests primarily

on the clinical picture of depression, and whereas younger patients with atypical pictures and superadded neurotic features are likely to respond well to a monoamine oxidase inhibitor, older patients with classical depressive syndromes respond better to tricyclic drugs or E.C.T. Patients with recurrent depressive states or manic depressive disorders are most often helped by the use of lithium carbonate, which has a prophylactic effect in the majority. The risks associated with these different approaches vary with the type of cardiac disorder and its complications affecting hepatic and renal function.

From spontaneous reports received by the Committee on Safety of Medicines, the incidence of arrhythmia from use of antidepressants of all types would appear to be very low. As selection of patients occurs in the use of these drugs in practice it is not yet possible to calculate the risks in patients already suffering from cardiac disorders. It seems also likely that the risk of using monoamine oxidase inhibitors in this context is in the production of hypotension rather than in causing arrhythmias. A choice of inappropriate drug for the individual sufferer lessens the chance of improvement, thus creating the risks associated with delayed recovery. Having chosen the appropriate treatment, the risks of using it—assessed by a cardiologist—should be weighed against the risks of leaving the depressed patient untreated. These risks are: suicide or attempted suicide and occasionally infanticide or homicide (the risk of suicide is likely to be higher in physically handicapped patients); increased cardiac disability due to an increased cardiac load from agitation and, in some cases, hypertension; potentially irreversible effects of the illness on the patient's life; hospitalization; and malnutrition. Whereas in most patients with cardiac disorder, the relative risks can be readily assessed, in cases of doubt the appropriate antidepressant should be introduced cautiously after admission to hospital so that any early effects can be seen clinically.